

BNL Groundwater Protection Group  
*Responses to EPA Comments on Phase 2 Work Plan for Characterization of Per- and Polyfluoroalkyl Substances (PFAS) in Known or Suspected  
 Firefighting Foam Release Areas*

Comment Number	Section	Comment	Response
<b>Email from Sharon Hartzell, EPA, August 15, 2018.</b>			
1	NA	Are the potable wells in which PFOA/PFOS were detected currently in use, and how many people do they serve? How often are they sampled for PFOA/PFOS, as well as other PFAS compounds, to ensure that concentrations remain below the HAL	<p>PFAS have been detected in three of BNL's five active water supply wells. Three of the wells with detectable PFAS (#6, #10 and #11) continue to be in active use. Well #4, that did not have detectable levels of PFAS, is not in routine use due to performance issues (i.e., low yield). Because well 4 is in close proximity to BNL's current firehouse where high levels of PFAS were detected in recently installed temporary monitoring wells, this well will probably be permanently taken out of service. BNL is also considering limiting the use of Well 6.</p> <p>On average, the BNL potable water system serves about 2,500 people daily. However, due to periodic fluctuations in staff and guest population, the EPA has classified it as a "medium sized water system" that serves &gt;3,300 people. In accordance with the <i>2018 Minimum Monitoring Requirements for Brookhaven National Laboratory</i>, which was prepared by the SCDHS, BNL is required to collect quarterly raw water samples from wells 6 and 10 and finished at the Water Treatment Plant, and an annual raw water sample from Well 11. The samples are required to be analyzed for six PFAS compounds: PFOS, PFOA, PFHxS, PFBS, PFHpA and PFNA. However, BNL has elected to collect samples for PFAS analyses from all the supply wells and the water treatment facility on a quarterly basis.</p>
2	Section 1	Sect. 1 - Are the depths of the screened	The screen depths for the potable supply wells are

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		zones for the BNL supply wells readily available? If so, we would like to access the information.	provided in the table below.
3	Section 3.2, Building 924 Area	Agree that additional characterization work may be advisable in the future	No response.
4	Sect. 3.4 Current Firehouse	With the high concentrations found at GP-02 and the preliminary conclusion of a connection of these results to the results found at supply well #6 and GP-01, could several additional geoprobes and one or two wells be installed south of Brookhaven Ave?	As noted in the Phase 2 Work Plan, the goal of the second phase is to verify impacts to groundwater in the immediate vicinity of the known or suspected foam release areas. Based upon the results of this effort, additional wells will be needed to characterize the downgradient extent of the contamination. The locations and depths of these wells will be provided in subsequent work plans and reviewed with the agencies.
5	NA	Can any existing monitoring wells be sampled for PFAS in areas of interest during Phase 2?	There are existing monitoring wells in several of the foam release areas. However, many of these wells have permanent sample pumps that contain Teflon components which could potentially cross contaminate groundwater samples. At this point in the characterization effort, the installation of Geoprobe wells allows for detailed vertical profiling of PFAS concentrations in the aquifer. For long-term monitoring, BNL is purchasing a small quantity of Teflon-free pumps and discharge tubing for installation into select permanent wells.
6	NA	Can surface soil samples (approx. 0 to 2 feet) and subsurface soil samples in the vadose zone be collected and analyzed from the planned geoprobes that are being installed in the other foam release areas in addition to those planned at the	Most of the Phase 2 Geoprobe wells will be installed immediately downgradient of the known or suspected foam release areas. Once the Phase 2 characterization effort has been completed, BNL will identify soil sampling locations and depths needed to adequately characterize the source area soils.

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		recreation center.	

**Table 1. Screen Depths of BNL Potable Supply Wells.**

Well Number	Land Surface (MSL)	Screen Depth (BLS)	Aquifer
4	92'	95'-147'	Upper Glacial
6	86'	95'-150'	Upper Glacial
7	92'	99'-150'	Upper Glacial
10	89'	91'-140'	Upper Glacial
11	90'	93'-142'	Upper Glacial
12 (a)	86'	92'-137'	Upper Glacial

(a): Well 12 is currently out of service.

MSL: Approximate land surface elevation in feet relative to mean sea level.

BLS: Approximate depth in feet below land surface.